



## SEQUENCE LISTING

<110> PLUCKTHUN, ANDREAS  
NIEBA, LARS  
HONEGGER, ANNEMARIE

<120> IMMUNOGLOBULIN SUPER FAMILY DOMAINS AND FRAGMENTS WITH  
INCREASED SOLUBILITY

<130> MORPHO/7

<140> 09/232,290

<141> 1999-01-15

<150> PCT/EP96/02230

<151> 1996-05-23

<160> 60

<170> PatentIn Ver. 2.0

<210> 1

<211> 113

<212> PRT

<213> Murine

<400> 1

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Val Val Ser Leu Gly  
1 5 10 15

Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Val Asp Ser Tyr  
20 25 30

Gly Lys Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
35 40 45

Lys Val Leu Ile Tyr Ile Ala Ser Asn Leu Glu Ser Gly Val Pro Ala  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr Leu Thr Ile Asp  
65 70 75 80

Pro Val Glu Ala Asp Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Asn Asn  
85 90 95

Glu Asp Pro Pro Pro Thr Phe Gly Ala Gly Thr Lys Leu Glu Met Arg  
100 105 110

Arg

<210> 2

<211> 108

<212> PRT

<213> Murine

&lt;400&gt; 2

Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly  
 1 5 10 15  
 Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Tyr Tyr Met  
 20 25 30  
 Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Arg Leu Leu Ile Tyr  
 35 40 45  
 Asp Thr Ser Asn Leu Ala Ser Gly Val Pro Val Arg Phe Ser Gly Ser  
 50 55 60  
 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu  
 65 70 75 80  
 Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Tyr Pro Pro Ile  
 85 90 95  
 Thr Phe Gly Val Gly Thr Lys Leu Asp Leu Lys Thr  
 100 105

&lt;210&gt; 3

&lt;211&gt; 108

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 3

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Val Ser Val Gly  
 1 5 10 15  
 Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Tyr Ser Asn  
 20 25 30  
 Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val  
 35 40 45  
 Tyr Ala Ala Thr Asn Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60  
 Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Ser  
 65 70 75 80  
 Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Tyr  
 85 90 95  
 Thr Phe Gly Gly Gly Thr Arg Leu Glu Ile Lys Arg  
 100 105

&lt;210&gt; 4

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 4

Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly  
 1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser  
 20 25 30

Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
 35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro  
 50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Tyr Leu Lys Ile  
 65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Ser  
 85 90 95

Thr His Val Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys  
 100 105 110

Arg

&lt;210&gt; 5

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 5

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly  
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Arg Trp  
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile  
 35 40 45

Tyr Lys Ala Ser Ser Leu Glu Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Ser Phe  
 85 90 95

Gly Pro Gly Thr Lys Val Asp Ile Lys Arg  
 100 105

&lt;210&gt; 6

&lt;211&gt; 108

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 6

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly  
 1 5 10 15

Glu Thr Val Thr Ile Thr Cys Thr Ala Ser Gly Asn Ile His Asn Tyr  
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val  
 35 40 45

Tyr Tyr Thr Thr Thr Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Pro  
 65 70 75 80

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Ser Thr Pro Arg  
 85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
 100 105

&lt;210&gt; 7

&lt;211&gt; 109

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 7

Glu Asn Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly  
 1 5 10 15

Glu Lys Val Thr Met Ala Cys Arg Ala Ser Ser Ser Val Ser Ser Thr  
 20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Ser Gly Ala Ser Pro Lys Leu Leu  
 35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser  
 50 55 60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Tyr Ile Ser Ser Val Glu  
 65 70 75 80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Gly Tyr Pro  
 85 90 95

Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg  
 100 105

&lt;210&gt; 8

&lt;211&gt; 114

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 8

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly  
 1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser  
 20 25 30

Gly Lys Arg Lys Asn Phe Leu Thr Trp Tyr His Gln Lys Pro Gly Gln  
 35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val  
 50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
 65 70 75 80

Ile Thr Ser Val Gln Ala Glu Asp Leu Ala Ile Tyr Tyr Cys Gln Asn  
 85 90 95

Asp Tyr Ser His Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu  
 100 105 110

Lys Arg

&lt;210&gt; 9

&lt;211&gt; 108

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Humanized  
 murine

&lt;400&gt; 9

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Val Asn Thr Ala  
 20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
 35 40 45

Tyr Ser Ala Ser Phe Leu Glu Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro  
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
 100 105

<210> 10  
 <211> 112  
 <212> PRT  
 <213> Murine

<400> 10  
 Asp Ile Val Leu Thr Gln Ser Pro Gly Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15  
 Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Gln Ser Val Asp Asp Asp  
 20 25 30  
 Gly Asn Ser Phe Leu His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
 35 40 45  
 Lys Leu Leu Ile Tyr Arg Ser Ser Asn Leu Ile Ser Gly Ile Pro Asp  
 50 55 60  
 Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr Leu Thr Ile Asn  
 65 70 75 80  
 Asp Pro Val Glu Ala Asp Val Ala Thr Tyr Tyr Cys Gln Gln Ser Asn  
 85 90 95  
 Gln Asp Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys Arg  
 100 105 110

<210> 11  
 <211> 111  
 <212> PRT  
 <213> Murine

<400> 11  
 Gln Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Ser Pro Gly Glu  
 1 5 10 15  
 Thr Val Thr Leu Thr Cys Arg Ser Ser Thr Gly Ala Val Thr Thr Ser  
 20 25 30  
 Asn Tyr Ala Asn Trp Tyr Gln Glu Lys Pro Asp His Leu Phe Thr Gly  
 35 40 45  
 Leu Ile Glu Glu Thr Asn Asn Arg Ala Pro Gly Val Pro Ala Arg Phe  
 50 55 60  
 Ser Gly Ser Leu Ile Gly Asp Lys Ala Ala Leu Thr Ile Thr Gly Ala  
 65 70 75 80  
 Gln Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Tyr Ser Asn  
 85 90 95  
 His Trp Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly  
 100 105 110

<210> 12  
 <211> 114

<212> PRT  
<213> Murine

<400> 12

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly  
1 5 10 15

Glu Lys Val Thr Met Ser Cys Thr Ser Ser Gln Ser Leu Phe Asn Ser  
20 25 30

Gly Lys Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln  
35 40 45

Pro Pro Lys Val Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val  
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn  
85 90 95

Asp Tyr Ser Asn Pro Leu Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu  
100 105 110

Lys Arg

<210> 13  
<211> 113  
<212> PRT  
<213> Murine

<400> 13

Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly  
1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser  
20 25 30

Asn Gly Asn Thr Tyr Leu Asn Trp Tyr Leu Gln Lys Ala Gly Gln Ser  
35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro  
50 55 60

Asp Thr Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Phe Cys Ser Gln Thr  
85 90 95

Thr His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
100 105 110

Arg

<210> 14  
 <211> 109  
 <212> PRT  
 <213> Murine

<400> 14  
 Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Ser Pro Gly Glu Thr  
   1                  5                  10                  15  
 Val Thr Leu Thr Cys Arg Ser Ser Thr Gly Ala Val Thr Thr Ser Asn  
           20                  25                  30  
 Tyr Ala Asn Trp Tyr Gln Glu Lys Pro Asp His Leu Phe Thr Gly Leu  
           35                  40                  45  
 Ile Gly Gly Thr Asn Asn Arg Ala Pro Gly Val Pro Ala Arg Phe Ser  
       50                  55                  60  
 Gly Ser Leu Ile Gly Asp Lys Ala Ala Leu Thr Ile Thr Gly Ala Gln  
       65                  70                  75                  80  
 Thr Glu Asp Glu Ala Arg Tyr Phe Cys Ala Leu Trp Tyr Ser Asn Leu  
           85                  90                  95  
 Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly  
           100                  105

<210> 15  
 <211> 113  
 <212> PRT  
 <213> Murine

<400> 15  
 Asp Val Leu Met Thr Gln Thr Pro Ile Ser Ile Pro Val Ser Leu Gly  
   1                  5                  10                  15  
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Gly  
           20                  25                  30  
 Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
       35                  40                  45  
 Pro Lys Leu Leu Ile Tyr Ser Ile Ser Ser Arg Phe Ser Gly Val Pro  
       50                  55                  60  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
       65                  70                  75                  80  
 Ser Arg Val Gln Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly  
           85                  90                  95  
 Ser His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
       100                  105                  110

Thr



<210> 16  
 <211> 108  
 <212> PRT  
 <213> Murine

<400> 16  
 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly  
   1                  5                  10                  15  
 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Tyr Asn Tyr  
           20                  25                  30  
 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile  
       35                  40                  45  
 Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
       50                  55                  60  
 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Asn Gln  
   65                  70                  75                  80  
 Glu Asp Met Ala Thr Tyr Ile Cys Gln Gln Gly Asn Thr Leu Pro Phe  
                   85                  90                  95  
 Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg  
           100                  105

<210> 17  
 <211> 111  
 <212> PRT  
 <213> Homo sapiens

<400> 17  
 Pro Ser Ala Leu Thr Gln Pro Pro Ser Ala Ser Gly Ser Leu Gly Gln  
   1                  5                  10                  15  
 Ser Val Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr  
       20                  25                  30  
 Asn Tyr Val Ser Trp Tyr Gln Gln His Ala Gly Lys Ala Pro Lys Val  
       35                  40                  45  
 Leu Ile Tyr Glu Val Asn Lys Arg Pro Ser Gly Val Pro Asp Arg Phe  
       50                  55                  60  
 Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Val Ser Gly Leu  
   65                  70                  75                  80  
 Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Glu Gly Ser  
           85                  90                  95  
 Asp Asn Phe Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly  
       100                  105                  110

<210> 18  
 <211> 108  
 <212> PRT  
 <213> Anous minutus

<220>  
 <223> Noddy Tern

<400> 18  
 Asp Ile Val Met Thr Gln Ser Pro Lys Phe Met Ser Thr Ser Val Gly  
   1                  5                  10                  15  
 Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala  
                   20                  25                  30  
 Val Val Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile  
           35                  40                  45  
 Tyr Trp Ala Ser Thr Arg His Ile Gly Val Pro Asp Arg Phe Ala Gly  
       50                  55                  60  
 Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Val Gln Ala  
   65                  70                  75                  80  
 Glu Asp Leu Ala Leu Tyr Tyr Cys Gln Gln His Tyr Ser Pro Pro Trp  
                   85                  90                  95  
 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
           100                  105

<210> 19  
 <211> 113  
 <212> PRT  
 <213> Murine

<400> 19  
 Glu Leu Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Ser Leu Gly  
   1                  5                  10                  15  
 Asp Gln Ala Ser Ile Ser Cys Arg Pro Ser Gln Ser Leu Val His Ser  
           20                  25                  30  
 Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
   35                  40                  45  
 Pro Lys Leu Leu Ile Tyr Arg Val Ser Asn Arg Phe Ser Gly Val Pro  
   50                  55                  60  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe Thr Leu Lys Ile  
   65                  70                  75                  80  
 Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Gly  
           85                  90                  95  
 Thr His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys  
       100                  105                  110

Arg

<210> 20  
 <211> 113  
 <212> PRT  
 <213> Murine

<400> 20  
 Asp Val Val Met Thr Gln Ile Pro Leu Ser Leu Pro Val Asn Leu Gly  
   1                  5                  10                  15  
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Ile His Ser  
                   20                  25                  30  
 Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
           35                          40                  45  
 Pro Lys Leu Leu Met Tyr Lys Val Ser Asn Arg Phe Tyr Gly Val Pro  
       50                          55                  60  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
   65                          70                  75                  80  
 Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Phe Cys Ser Gln Ser  
                   85                          90                  95  
 Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
       100                          105                  110

Arg

<210> 21  
 <211> 108  
 <212> PRT  
 <213> Murine

<400> 21  
 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly  
   1                  5                  10                  15  
 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr  
                   20                  25                  30  
 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile  
       35                          40                  45  
 Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
       50                          55                  60  
 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu His  
   65                          70                  75                  80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Ser Thr Leu Pro Arg  
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
100 105

<210> 22

$\langle 211 \rangle$  111

<212> PRT

<213> Homo sapiens

<400> 22

Gln Ser Val Leu Thr Gln Pro Pro Ser Ala Ser Gly Thr Pro Gly Gln  
1 5 10 15

Arg Val Thr Ile Ser Cys Ser Gly Thr Ser Ser Asn Ile Gly Ser Ser  
20 25 30

Thr Val Asn Trp Tyr Gln Gln Leu Pro Gly Met Ala Pro Lys Leu Leu  
35 40 45

Ile Tyr Arg Asp Ala Met Arg Pro Ser Gly Val Pro Asp Arg Phe Ser  
50 55 60

Gly Ser Lys Ser Gly Ala Ser Ala Ser Leu Ala Ile Gly Gly Leu Gln  
65 70 75 80

Ser Glu Asp Glu Thr Asp Tyr Tyr Cys Ala Ala Trp Asp Val Ser Leu  
85 90 95

Asn Ala Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly  
100 105 110

<210> 23

<211> 107

<212> PRT

<213> Murine

<400> 23

Glu Ile Val Leu Thr Gln Ser Pro Ala Ile Thr Ala Ala Ser Leu Gly  
1 5 10 15

Gln Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Ser Lys  
20 25 30

Asn	Trp	Tyr	Gln	Gln	Lys	Ser	Gly	Thr	Ser	Pro	Lys	Pro	Trp	Ile	Tyr
		35					40					45			

Glu Ile Ser Lys Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser  
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Asn Thr Met Glu Ala Glu  
65 70 75 80

Asp Ala Ala Ile Tyr Tyr Cys Gln Gln Trp Thr Tyr Pro Leu Ile Thr  
85 90 95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg  
 100 105

<210> 24  
 <211> 106  
 <212> PRT  
 <213> Murine

<400> 24  
 Asp Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly  
 1 5 10 15  
 Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Asn Tyr Met  
 20 25 30  
 Tyr Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys Arg Trp Ile Tyr  
 35 40 45  
 Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Val Arg Phe Ser Gly Ser  
 50 55 60  
 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Thr Glu  
 65 70 75 80  
 Asp Ala Ala Glu Tyr Tyr Cys Gln Gln Trp Gly Thr Asn Pro Thr Phe  
 85 90 95  
 Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
 100 105

<210> 25  
 <211> 113  
 <212> PRT  
 <213> Murine

<400> 25  
 Asp Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly  
 1 5 10 15  
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Asn Gln Thr Ile Leu Leu Ser  
 20 25 30  
 Asp Gly Asp Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
 35 40 45  
 Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro  
 50 55 60  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
 65 70 75 80  
 Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly  
 85 90 95

Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
                   100                  105                  110

Arg

<210> 26  
 <211> 114  
 <212> PRT  
 <213> Murine

<400> 26  
 Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Val Ser Ala Gly  
   1                  5                  10                  15  
 Glu Arg Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser  
                   20                  25                  30  
 Gly Asn Gln Lys Asn Phe Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln  
                   35                  40                  45  
 Pro Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Glu Val  
                   50                  55                  60  
 Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
   65                  70                  75                  80  
 Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn  
                   85                  90                  95  
 Asp His Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile  
                   100                  105                  110

Lys Arg

<210> 27  
 <211> 108  
 <212> PRT  
 <213> Murine

<400> 27  
 Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Val Thr Pro Gly  
   1                  5                  10                  15  
 Asn Ser Val Ser Leu Ser Cys Arg Ala Ser Gln Ser Ile Gly Asn Asn  
                   20                  25                  30  
 Leu His Trp Tyr Gln Gln Lys Ser His Glu Ser Pro Arg Leu Leu Ile  
                   35                  40                  45  
 Lys Tyr Ala Ser Gln Ser Ile Ser Gly Ile Pro Ser Arg Phe Ser Gly  
   50                  55                  60  
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Ser Val Glu Thr  
   65                  70                  75                  80

Glu Asp Phe Gly Met Tyr Phe Cys Gln Gln Ser Asn Ser Trp Pro Tyr  
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
100 105

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<210> 28
<211> 113
<212> PRT
<213> Murine
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<400> 28  
Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly  
1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser  
20 25 30

Gln Gly Asn Thr Tyr Leu Arg Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
35 40 45

Pro Lys Val Lys Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro  
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Met Tyr Phe Cys Ser Gln Ser  
85 90 95

Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
100 105 110

Arg

```
<210> 29
<211> 107
<212> PRT
<213> Murine
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```
<400> 29
Asp Ile Gln Met Thr Gln Ile Pro Ser Ser Leu Ser Ala Ser Leu Gly
  1             5             10             15
```

Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Phe  
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Ile Lys Leu Leu Ile  
35 40 45

Tyr Phe Thr Ser Arg Ser Gln Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln  
65 70 75 80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Ala Leu Pro Arg  
85 90 95

Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg  
100 105

<210> 30

<211> 105

<212> PRT

<213> Homo sapiens

<400> 30

Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ser Pro Gly Gln Thr Ala  
1 5 10 15

Arg Ile Thr Cys Ser Ala Asn Ala Leu Pro Asn Gln Tyr Ala Tyr Trp  
20 25 30

Tyr Gln Gln Lys Pro Gly Arg Ala Pro Val Met Val Ile Tyr Lys Asp  
35 40 45

Thr Gln Arg Pro Ser Gly Ile Pro Gln Arg Phe Ser Ser Ser Thr Ser  
50 55 60

Gly Thr Thr Val Thr Leu Thr Ile Ser Gly Val Gln Ala Glu Asp Glu  
65 70 75 80

Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Asn Ser Ala Ser Ile Phe Gly  
85 90 95

Gly Gly Thr Lys Leu Thr Val Leu Gly  
100 105

<210> 31

<211> 119

<212> PRT

<213> Murine

<400> 31

Gln Val Lys Leu Gln Glu Ser Gly Pro Ala Val Ile Lys Pro Ser Gln  
1 5 10 15

Ser Leu Ser Leu Thr Cys Ile Val Ser Gly Phe Ser Ile Thr Arg Thr  
20 25 30

Asn Tyr Cys Trp His Trp Ile Arg Pro Gly Lys Gly Leu Glu Trp Met  
35 40 45

Gly Arg Ile Cys Tyr Glu Glu Ser Ile Tyr Tyr Ser Pro Ser Ile Lys  
50 55 60

Ser Arg Ser Thr Ile Ser Arg Asp Thr Ser Leu Asn Lys Phe Phe Ile  
65 70 75 80



Gln Leu Ile Ser Val Thr Asn Glu Asp Thr Ala Met Tyr Tyr Cys Ser  
85 90 95

Arg Glu Asn His Met Tyr Glu Thr Tyr Phe Asp Val Trp Gly Gln Gly  
100 105 110

Thr Thr Val Thr Val Ser Ser  
115

<210> 32

<211> 117

<212> PRT

<213> Murine

<400> 32

Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln  
1 5 10 15

Ser Gln Ser Gln Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr  
20 25 30

Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu  
35 40 45

Glu Trp Met Gly Tyr Met Ser Tyr Ser Gly Ser Thr Arg Tyr Asn Pro  
50 55 60

Ser Leu Arg Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln  
65 70 75 80

Phe Phe Leu Gln Leu Lys Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr  
85 90 95

Phe Cys Ala Arg Gly Trp Pro Leu Ala Tyr Trp Gly Gln Gly Thr Gln  
100 105 110

Val Ser Val Ser Glu  
115

<210> 33

<211> 115

<212> PRT

<213> Murine

<400> 33

Val Gln Leu Gln Gln Ser Asp Ala Glu Lys Val Lys Pro Gly Ala Ser  
1 5 10 15

Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp His Ala  
20 25 30

Ile His Trp Ala Lys Gln Lys Pro Glu Gln Gly Leu Glu Trp Ile Gly  
35 40 45

Tyr Ile Ser Pro Gly Asn Asp Asp Ile Lys Tyr Asn Glu Lys Phe Lys  
 50 55 60  
 Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr Met  
 65 70 75 80  
 Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys Lys  
 85 90 95  
 Arg Ser Thr Ala Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr  
 100 105 110  
 Val Ser Ser  
 115

<210> 34  
 <211> 119  
 <212> PRT  
 <213> Murine

<400> 34  
 Glu Val Gln Pro Val Glu Thr Gly Gly Gly Leu Val Gln Pro Lys Gly  
 1 5 10 15  
 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Asn Thr Asn  
 20 25 30  
 Ala Asn Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45  
 Ala Arg Ser Lys Ser Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp Ser Val  
 50 55 60  
 Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser Gln Asn Met Leu Tyr  
 65 70 75 80  
 Leu Gln Met Asn Asn Leu Lys Thr Glu Asp Thr Ala Met Tyr Tyr Cys  
 85 90 95  
 Val Arg Asp Gln Thr Gly Thr Ala Trp Phe Ala Tyr Trp Gly Gln Gly  
 100 105 110  
 Thr Leu Val Thr Val Ser Ala  
 115

<210> 35  
 <211> 126  
 <212> PRT  
 <213> Homo sapiens

<400> 35  
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Phe Gly Arg  
 1 5 10 15  
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Asp Tyr  
 20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45

Ser Gly Ile Ser Trp Asp Ser Ser Ser Ile Gly Tyr Ala Asp Ser Val  
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr  
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Met Ala Leu Tyr Tyr Cys  
 85 90 95

Val Lys Gly Arg Asp Tyr Tyr Asp Ser Gly Gly Tyr Phe Thr Val Ala  
 100 105 110

Phe Asp Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser  
 115 120 125

<210> 36

<211> 116

<212> PRT

<213> Murine

<400> 36

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
 1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Gly Tyr  
 20 25 30

Gly Val Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
 35 40 45

Gly Met Ile Trp Gly Asp Gly Asn Thr Asp Tyr Asn Ser Ala Leu Lys  
 50 55 60

Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu  
 65 70 75 80

Lys Met Asn Ser Leu His Thr Asp Asp Thr Ala Arg Tyr Tyr Cys Ala  
 85 90 95

Arg Glu Arg Asp Tyr Arg Leu Asp Tyr Trp Gly Gln Gly Thr Thr Leu  
 100 105 110

Thr Val Ser Ser  
 115

<210> 37

<211> 119

<212> PRT

<213> Murine

&lt;400&gt; 37

Asp Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Glu Lys Pro Gly Ala  
 1 5 10 15  
 Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Phe Ser Leu Pro Gly His  
 20 25 30  
 Asn Ile Asn Trp Ile Val Gln Arg Asn Gly Lys Ser Leu Glu Trp Ile  
 35 40 45  
 Gly Asn Ile Asp Pro Tyr Tyr Gly Gly Thr Asn Phe Asn Pro Lys Phe  
 50 55 60  
 Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Leu Tyr  
 65 70 75 80  
 Met His Leu Thr Ser Leu Gln Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
 85 90 95  
 Ala Arg Arg Arg Asp Gly Asn Tyr Gly Phe Thr Tyr Trp Gly Gln Gly  
 100 105 110  
 Thr Leu Val Thr Val Ser Ala  
 115

&lt;210&gt; 38

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 38

Glu Val Leu Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly  
 1 5 10 15  
 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe  
 20 25 30  
 Gly Met Ser Trp Val Arg His Thr Pro Asp Lys Arg Leu Glu Trp Val  
 35 40 45  
 Ala Thr Ile Ser Asn Gly Gly Gly Tyr Thr Tyr Tyr Gln Asp Ser Val  
 50 55 60  
 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Phe  
 65 70 75 80  
 Leu Glu Met Thr Ser Leu Lys Ser Glu Asp Ala Gly Leu Tyr Tyr Cys  
 85 90 95  
 Ala Arg Arg Glu Arg Tyr Asp Glu Lys Gly Phe Ala Tyr Trp Gly Arg  
 100 105 110  
 Gly Thr Leu Val Thr Val Ser Ala  
 115 120

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<400> 39
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gln Gln
  1               5               10               15
Phe Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
      20               25               30
Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
      35               40               45
Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val
      50               55               60
Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn Thr Leu Tyr
      65               70               75               80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
      85               90               95
Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Val Trp Gly Gln
      100               105               110
Gly Thr Leu Val Thr Val Ser Ser
      115               120

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<400> 40
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
  1              5              10              15

Ser Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Tyr
      20              25              30

Gly Met Gly Val Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
      35              40              45

Trp Leu Ala His Ile Phe Trp Asp Gly Asp Lys Arg Tyr Asn Pro Ser
      50              55              60

Leu Lys Ser Arg Leu Lys Ile Ser Lys Asp Thr Ser Asn Asn Gln Val
      65              70              75              80

Phe Leu Lys Ile Thr Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr
      85              90              95

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Cys Val Gln Glu Gly Tyr Ile Tyr Trp Gly Gln Gly Thr Ser Val Thr  
                   100                  105                  110

Val Ser Ser  
           115

<210> 41  
 <211> 122  
 <212> PRT  
 <213> Murine

<400> 41  
 Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
   1                  5                  10                  15  
 Thr Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Leu Leu Ile Ser Asn  
                   20                  25                  30  
 Gly Val His Trp Val Arg Gln Pro Pro Gln Lys Gly Leu Glu Trp Leu  
           35                  40                  45  
 Gly Val Ile Trp Ala Gly Gly Asn Thr Asn Tyr Asn Ser Ala Leu Met  
   50                  55                  60  
 Ser Arg Val Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu  
   65                  70                  75                  80  
 Lys Met Lys Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr Tyr Cys Ala  
                   85                  90                  95  
 Arg Asp Phe Tyr Asp Tyr Asp Val Phe Tyr Tyr Ala Met Asp Tyr Trp  
           100                  105                  110  
 Gly Gln Gly Thr Ser Val Thr Val Ser Ser  
           115                  120

<210> 42  
 <211> 120  
 <212> PRT  
 <213> Murine

<400> 42  
 Glu Val Gln Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly  
   1                  5                  10                  15  
 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser Ser Tyr  
           20                  25                  30  
 Gly Met Ser Trp Val Arg Gln Thr Pro Asp Lys Arg Leu Glu Trp Val  
           35                  40                  45  
 Ala Thr Ile Ser Asn Gly Gly Gly Tyr Thr Tyr Tyr Pro Asp Ser Val  
   50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr  
 65 70 75 80

Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Ser Ala Met Tyr Tyr Cys  
 85 90 95

Ala Arg Arg Glu Arg Tyr Asp Glu Asn Gly Phe Ala Tyr Trp Gly Gln  
 100 105 110

Gly Thr Leu Val Thr Val Ser Ala  
 115 120

<210> 43  
 <211> 118  
 <212> PRT  
 <213> Murine

<400> 43  
 Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala Ser  
 1 5 10 15

Val Arg Met Ser Cys Lys Ser Ser Gly Tyr Ile Phe Thr Asp Phe Tyr  
 20 25 30

Met Asn Trp Val Arg Gln Ser His Gly Lys Ser Leu Asp Tyr Ile Gly  
 35 40 45

Tyr Ile Ser Pro Tyr Ser Gly Val Thr Gly Tyr Asn Gln Lys Phe Lys  
 50 55 60

Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr Met  
 65 70 75 80

Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala  
 85 90 95

Gly Ser Ser Gly Asn Lys Trp Ala Met Asp Tyr Trp Gly His Gly Ala  
 100 105 110

Ser Val Thr Val Ser Ser  
 115

<210> 44  
 <211> 114  
 <212> PRT  
 <213> Murine

<400> 44  
 Glu Val Thr Leu Val Glu Ser Gly Gly Asp Ser Val Lys Pro Gly Gly  
 1 5 10 15

Ser Leu Lys Lys Ser Cys Ala Ala Ser Gly Phe Thr Leu Ser Gly Glu  
 20 25 30

Thr Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val  
 35 40 45

Ala Thr Thr Leu Ser Gly Gly Gly Phe Thr Phe Tyr Ser Ala Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Gln Asn Asn Leu Tyr  
65 70 75 80

Leu Gln Leu Asn Ser Leu Arg Ser Glu Asp Thr Ala Leu Tyr Phe Cys  
85 90 95

Ala Ser His Arg Phe Val His Trp Gly His Gly Thr Leu Val Thr Val  
100 105 110

Ser Ala

<210> 45  
<211> 118  
<212> PRT  
<213> Murine

<400> 45  
Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Ser  
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe Thr Thr Tyr  
20 25 30

Ala Met His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile  
35 40 45

Gly Leu Ile Ser Pro Ser Ser Gly Tyr Thr Ser Tyr Asn Gly Glu Phe  
50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr  
65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr Cys  
85 90 95

Ala Arg Val Met Gly Glu Gln Tyr Phe Asp Phe Trp Gly Ala Gly Thr  
100 105 110

Thr Val Thr Val Ser Ser  
115

<210> 46  
<211> 119  
<212> PRT  
<213> Murine

<400> 46  
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15



Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Thr Asp Tyr  
                   20                  25                  30  
 Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
                   35                  40                  45  
 Gly Phe Ile Arg Asn Lys Ala Asp Gly Tyr Thr Thr Glu Tyr Ser Ala  
           50                  55                  60  
 Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile  
   65                  70                  75                  80  
 Leu Tyr Leu Gln Met Asn Thr Leu Arg Ala Glu Asp Ser Ala Thr Tyr  
                   85                  90                  95  
 Tyr Cys Thr Arg Asp Pro Tyr Gly Pro Ala Ala Tyr Trp Gly Gln Gly  
                   100                  105                  110  
 Thr Leu Val Thr Val Ser Ala  
           115

<210> 47  
 <211> 117  
 <212> PRT  
 <213> Homo sapiens

<400> 47  
 Pro Leu Val Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu  
   1                  5                  10                  15  
 Ala Leu Ser Leu Thr Cys Thr Val Ser Gly Asp Ser Ile Asn Thr Ile  
                   20                  25                  30  
 Leu Tyr Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu  
                   35                  40                  45  
 Trp Ile Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Tyr Gly Asn Pro Ser  
   50                  55                  60  
 Leu Lys Ser Arg Val Thr Ile Ser Val Asn Thr Ser Lys Asn Gln Phe  
   65                  70                  75                  80  
 Tyr Ser Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr  
                   85                  90                  95  
 Cys Ala Arg Val Pro Leu Val Val Asn Pro Trp Gly Gln Gly Thr Leu  
                   100                  105                  110  
 Val Thr Val Ser Ser  
           115

<210> 48  
 <211> 120  
 <212> PRT  
 <213> Anous Minutus

&lt;220&gt;

&lt;223&gt; Noddy Tern

&lt;400&gt; 48

Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu  
 1 5 10 15

Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr  
 20 25 30

Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met  
 35 40 45

Gly Trp Ile Asn Thr Asn Thr Gly Glu Pro Thr Tyr Gly Glu Glu Phe  
 50 55 60

Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Asn  
 65 70 75 80

Leu Gln Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr Phe Phe Cys  
 85 90 95

Ala Arg Gly Glu Asp Asn Phe Gly Ser Leu Ser Asp Tyr Trp Gly Gln  
 100 105 110

Gly Thr Thr Val Thr Val Ser Ser  
 115 120

&lt;210&gt; 49

&lt;211&gt; 116

&lt;212&gt; PRT

&lt;213&gt; Murine

&lt;400&gt; 49

Arg Val Gln Leu Leu Glu Ser Gly Ala Glu Leu Met Lys Pro Gly Ala  
 1 5 10 15

Ser Val Gln Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Glu Tyr  
 20 25 30

Trp Ile Glu Trp Val Lys Glu Arg Pro Gly His Gly Leu Glu Trp Ile  
 35 40 45

Gly Glu Ile Leu Pro Gly Ser Gly Arg Thr Asn Tyr Arg Glu Lys Phe  
 50 55 60

Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr  
 65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
 85 90 95

Thr Arg Gly Tyr Ser Ser Met Asp Tyr Trp Gly Gln Gly Thr Ser Val  
 100 105 110

Thr Val Ser Ala  
 115

<210> 50  
 <211> 119  
 <212> PRT  
 <213> Murine

<400> 50  
 Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu  
   1                  5                  10                  15  
 Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
                   20                  25                  30  
 Gly Val Asn Trp Val Lys Glu Ala Pro Gly Lys Glu Leu Lys Trp Met  
                   35                  40                  45  
 Gly Trp Ile Asn Ile Tyr Thr Gly Glu Pro Thr Tyr Val Asp Asp Phe  
                   50                  55                  60  
 Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr  
                   65                  70                  75                  80  
 Leu Glu Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr Tyr Phe Cys  
                   85                  90                  95  
 Thr Arg Gly Asp Tyr Val Asn Trp Tyr Phe Asp Val Trp Gly Ala Gly  
                   100                  105                  110  
 Thr Thr Val Thr Val Ser Ser  
                   115

<210> 51  
 <211> 124  
 <212> PRT  
 <213> Murine

<400> 51  
 Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Ala Gly Ser  
   1                  5                  10                  15  
 Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr  
                   20                  25                  30  
 Gly Val Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile  
                   35                  40                  45  
 Gly Tyr Ile Asn Pro Gly Lys Gly Tyr Leu Ser Tyr Asn Glu Lys Phe  
                   50                  55                  60  
 Lys Gly Lys Thr Thr Leu Thr Val Asp Arg Ser Ser Ser Thr Ala Tyr  
                   65                  70                  75                  80  
 Met Gln Leu Arg Ser Leu Thr Ser Glu Asp Ala Ala Val Tyr Phe Cys  
                   85                  90                  95

Ala Arg Ser Phe Tyr Gly Gly Ser Asp Leu Ala Val Tyr Tyr Phe Asp  
 100 105 110

Ser Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser  
 115 120

<210> 52  
 <211> 126  
 <212> PRT  
 <213> Homo sapiens

<400> 52  
 Glu Val Gln Leu Val Gln Ser Gly Gly Gly Val Val Gln Pro Gly Arg  
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ser Ser Gly Phe Ile Phe Ser Ser Tyr  
 20 25 30

Ala Met Tyr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45

Ala Ile Ile Trp Asp Asp Gly Ser Asp Gln His Tyr Ala Asp Ser Val  
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asn Asp Ser Lys Asn Ser Leu Phe  
 65 70 75 80

Leu Gln Met Asp Ser Leu Arg Pro Glu Asp Thr Gly Val Tyr Phe Cys  
 85 90 95

Ala Arg Asp Gly Gly His Gly Phe Cys Ser Ser Ala Ser Cys Phe Gly  
 100 105 110

Pro Asp Tyr Trp Gly Gln Gly Thr Pro Val Thr Val Ser Ser  
 115 120 125

<210> 53  
 <211> 118  
 <212> PRT  
 <213> Murine

<400> 53  
 Glu Val Lys Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Lys Tyr  
 20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile  
 35 40 45

Gly Glu Ile His Pro Asp Ser Gly Thr Ile Asn Tyr Thr Pro Ser Leu  
 50 55 60

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr  
 65 70 75 80

Leu Gln Met Ser Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys  
85 90 95

Ala Arg Leu His Tyr Tyr Gly Tyr Asn Ala Tyr Trp Gly Gln Gly Thr  
100 105 110

Leu Val Thr Val Ser Ala  
115

```
<210> 54
<211> 115
<212> PRT
<213> Murine
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```
<400> 54
Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys Pro Gly Ala Ser
   1                   5             10           15
```

Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Ser Asp Tyr Trp  
20 25 30

Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile Gly  
35 40 45

Glu Ile Leu Pro Gly Ser Gly Ser Thr Asn Tyr His Glu Arg Phe Lys  
50 55 60

Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Ser Thr Ala Tyr Met  
65 70 75 80

Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Leu  
85 90 95

His Gly Asn Tyr Asp Phe Asp Gly Trp Gly Gln Gly Thr Thr Leu Thr  
100 105 110

Val Ser Ser  
115

```
<210> 55
<211> 119
<212> PRT
<213> Murine
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<400> 55  
Glu Val Gln Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly  
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Cys  
20 25 30

Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val  
35 40 45

Ala Gly Ile Ser Ser Gly Gly Ser Tyr Thr Phe Tyr Pro Asp Thr Val  
 50 55 60

Lys Gly Arg Phe Ile Ile Ser Arg Asn Asn Ala Arg Asn Thr Leu Ser  
 65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Ile Tyr Tyr Cys  
 85 90 95

Thr Arg Tyr Ser Ser Asp Pro Phe Tyr Phe Asp Tyr Trp Gly Gln Gly  
 100 105 110

Thr Thr Leu Thr Val Ser Ser  
 115

<210> 56

<211> 122

<212> PRT

<213> Murine

<400> 56

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Phe  
 20 25 30

Tyr Met Glu Trp Val Arg Gln Pro Pro Gly Lys Arg Leu Glu Trp Ile  
 35 40 45

Ala Ala Ser Arg Asn Lys Gly Asn Lys Tyr Thr Thr Glu Tyr Ser Ala  
 50 55 60

Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser Gln Ser Ile  
 65 70 75 80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Thr Ala Ile Tyr  
 85 90 95

Tyr Cys Ala Arg Asn Tyr Tyr Gly Ser Thr Trp Tyr Phe Asp Val Trp  
 100 105 110

Gly Ala Gly Thr Thr Val Thr Val Ser Ser  
 115 120

<210> 57

<211> 113

<212> PRT

<213> Murine

<400> 57

Asp Val Gln Leu Gln Glu Ser Gly Pro Ser Leu Val Lys Pro Ser Gln  
 1 5 10 15

Thr Leu Ser Leu Thr Cys Ser Val Thr Gly Asp Ser Ile Thr Ser Asp  
 20 25 30

Tyr Trp Ser Trp Ile Arg Lys Phe Pro Gly Asn Arg Leu Glu Tyr Met  
 35 40 45

Gly Tyr Val Ser Tyr Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys  
 50 55 60

Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Tyr Tyr Leu  
 65 70 75 80

Asp Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95

Asn Trp Asp Gly Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser  
 100 105 110

Ala

<210> 58

<211> 118

<212> PRT

<213> Murine

<400> 58

Glu Val Gln Leu Asp Glu Thr Gly Gly Gly Leu Val Gln Pro Gly Arg  
 1 5 10 15

Pro Met Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asp Tyr  
 20 25 30

Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val  
 35 40 45

Ala Gln Ile Arg Asn Lys Pro Tyr Asn Tyr Glu Thr Tyr Tyr Ser Asp  
 50 55 60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ser  
 65 70 75 80

Val Tyr Leu Gln Met Asn Asn Leu Arg Val Glu Asp Met Gly Ile Tyr  
 85 90 95

Tyr Cys Thr Gly Ser Tyr Tyr Gly Met Asp Tyr Trp Gly Gln Gly Thr  
 100 105 110

Ser Val Thr Val Ser Ser  
 115

<210> 59

<211> 121

<212> PRT

<213> Murine

&lt;400&gt; 59

Glu Val Gln Leu Gln Gln Ser Gly Val Glu Leu Val Arg Ala Gly Ser  
 1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Asn  
 20 25 30

Gly Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile  
 35 40 45

Gly Tyr Asn Asn Pro Gly Asn Gly Tyr Ile Ala Tyr Asn Glu Lys Phe  
 50 55 60

Lys Gly Lys Thr Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr  
 65 70 75 80

Met Gln Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys  
 85 90 95

Ala Arg Ser Glu Tyr Tyr Gly Gly Ser Tyr Lys Phe Asp Tyr Trp Gly  
 100 105 110

Gln Gly Thr Thr Leu Thr Val Ser Ser  
 115 120

&lt;210&gt; 60

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 60

Ala Val Gln Leu Val Gln Ala Gly Gly Gly Val Val Gln Pro Gly Arg  
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ile Ala Ser Gly Phe Thr Phe Ser Asn Tyr  
 20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45

Ala Val Ile Trp Tyr Asn Gly Ser Arg Thr Tyr Tyr Gly Asp Ser Val  
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Arg Thr Leu Tyr  
 65 70 75 80

Met Gln Met Asn Ser Leu Arg Thr Glu Asp Thr Ala Val Tyr Tyr Cys  
 85 90 95

Ala Arg Asp Pro Asp Ile Leu Thr Ala Phe Ser Phe Asp Tyr Trp Gly  
 100 105 110

Gln Gly Val Leu Val Thr Val Ser Ser  
 115 120